

Chapter 51-51 WAC

STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE ((2006)) 2009 EDITION OF THE INTERNATIONAL RESIDENTIAL CODE

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-003 International Residential Code. The ((2006)) 2009 edition of the *International Residential Code* as published by the International Code Council is hereby adopted by reference with the following additions, deletions, and exceptions: Provided that chapters 11 and 25 through ((42)) 43 of this code are not adopted. Energy Code is regulated by chapter 51-11 WAC; Plumbing Code is regulated by chapter 51-56 WAC; Electrical Code is regulated by chapter 296-46B WAC or Electrical Code as adopted by the local jurisdiction. Appendix G, Swimming Pools, Spas and Hot Tubs, is included in adoption of the International Residential Code.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-008 Implementation. The International Residential Code adopted by chapter 51-51 Washington Administrative Code (WAC) shall become effective in all counties and cities of this state on July 1, ((2007)) 2010.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0102 Section R102--Applicability.

R102.5 Appendices. Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance. Except for Appendix S, Fire Sprinklers, an appendix adopted by a local

jurisdiction shall not be effective unless approved by the state building code council pursuant to RCW 19.27.060 (1)(a). The state building code council has determined that a local ordinance requiring fire sprinklers in accordance with Appendix S of this chapter may be adopted by any local government upon notification of the council.

Appendix G, Swimming Pools, Spas and Hot Tubs, and Appendix R, Dwelling Unit Fire Sprinkler Systems, are included in adoption of the International Residential Code.

R102.7.1 Additions, alterations or repairs. Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated. Additions, alterations or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

EXCEPTIONS:

1. Additions with less than 500 square feet of conditioned floor area are exempt from the requirements for Whole House Ventilation Systems, Section M1508.
2. Additions or alterations to existing buildings which do not require the construction of foundations, crawlspaces, slabs or basements shall not be required to meet the requirements for radon protection in Section R327.1 and Appendix F.

R102.7.2 Moved buildings. Buildings or structures moved into or within a jurisdiction shall comply with the provisions of this code, the International Building Code (chapter 51-50 WAC), the International Mechanical Code (chapter 51-52 WAC), the International Fire Code (chapter 51-54 WAC), the Uniform Plumbing Code and Standards (chapters 51-56 and 51-57 WAC), the Washington State Energy Code (chapter 51-11 WAC) and the Washington State Ventilation and Indoor Air Quality Code (chapter 51-13 WAC) for new buildings or structures.

EXCEPTION:

Group R-3 buildings or structures are not required to comply if:

1. The original occupancy classification is not changed; and
2. The original building is not substantially remodeled or rehabilitated. For the purposes of this section a building shall be considered to be substantially remodeled when the costs of remodeling exceed 60 percent of the value of the building exclusive of the costs relating to preparation, construction, demolition or renovation of foundations.

AMENDATORY SECTION (Amending WSR 09-04-023, filed 1/27/09, effective 7/1/09)

WAC 51-51-0202 Section R202--Definitions.

ADULT FAMILY HOME means a dwelling in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services.

((~~BALCONY, EXTERIOR.~~ Definition is not adopted.))

AIR-IMPERMEABLE INSULATION. An insulation having an air permeance equal

to or less than 0.02 L/s-m² at 75 Pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.

ATTIC, HABITABLE. A conditioned area, not considered a story, complying with all of the following requirements:

1. The occupiable floor area is at least 70 square feet (6.5 m²), in accordance with Section R304.

2. The occupiable floor area has a ceiling height in accordance with Section R305.

3. The occupiable space is enclosed by the roof assembly above, knee walls (if applicable) on the sides, and the floor-ceiling assembly below.

CHILD DAY CARE, shall, for the purposes of these regulations, mean the care of children during any period of a 24 hour day.

CHILD DAY CARE HOME, FAMILY is a child day care facility, licensed by the state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

~~((DECK. Definition is not adopted.))~~

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. Dwelling units may also include the following uses:

1. Adult family homes, foster family care homes and family day care homes licensed by the Washington state department of social and health services.

2. Offices, mercantile, food preparation for off-site consumption, personal care salons or similar uses which are conducted primarily by the occupants of the dwelling unit and are secondary to the use of the unit for dwelling purposes, and which do not exceed 500 square feet (46.4 m²).

3. Owner-occupied dwellings with 5 or fewer guest rooms.

FIRE SEPARATION DISTANCE. The distance measured from the foundation wall or face of the wall framing, whichever is closer, to one of the following:

1. To the closest interior lot line; or

2. To the centerline of a street, an alley or public way; or

3. To an imaginary line between two buildings on the lot.

The distance shall be measured at a right angle from the wall.

SMALL BUSINESS. Any business entity (including a sole proprietorship, corporation, partnership or other legal entity) which is owned and operated independently from all other businesses, which has the purpose of making a profit, and which has fifty or fewer employees, or which has a million dollars or less per year in gross sales, of window products.

~~((UNUSUALLY TIGHT CONSTRUCTION. Construction meeting the following requirements:~~

~~1. Walls exposed to the outside atmosphere having a continuous~~

~~water vapor retarder with a rating of 1 perm (57 ng/s·m²·Pa) or less with openings gasketed or sealed;~~

~~2. Openable windows and doors meeting the air leakage requirements of the *International Energy Conservation Code*, Section 502.1.4; and~~

~~3. Caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical and gas lines, and at other openings; or~~

~~4. Buildings built in compliance with the 1986 or later editions of the Washington State Energy Code chapter 51-11 WAC, Northwest Energy Code, or Super Good Cents weatherization standards or equivalent.))~~

SOURCE SPECIFIC VENTILATION SYSTEM. A mechanical ventilation system including all fans, controls, and ducting, which is dedicated to exhausting contaminant-laden air to the exterior of the building from the room or space in which the contaminant is generated.

WHOLE HOUSE VENTILATION SYSTEM. A mechanical ventilation system, including fans, controls, and ducts, which replaces, by direct or indirect means, air from the habitable rooms with outdoor air.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-0301 ((Section R301--Design criteria.)) Reserved.

**((TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE
LOADS
(in pounds per square foot)**

USE	LIVE LOAD
Attics with limited storage ^{tr,†}	20
Attics without storage ^{tr}	10
Decks ^r and exterior balconies	40
Fire escapes	40
Guardrails and handrails ^{tr}	200 ^r
Guardrails in-fill components ^r	50 ^r
Passenger vehicle garages ^{tr}	50 ^r
Rooms other than sleeping rooms	40
Sleeping rooms	30
Stairs	40 ^r

^{tr}Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.

[†]Attics without storage are those where the maximum clear height between joist and rafter is less than 42 inches, or where there are not two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plane of the truss. For attics without storage, this live load need not be assumed to act concurrently with any other live

load requirements:

^cIndividual stair treads shall be designed for the uniformly distributed live load or a 300 pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.

^dA single concentrated load applied in any direction at any point along the top.

^eSee Section R502.2.1 for decks attached to exterior walls.

^fGuard-in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

^gFor attics with limited storage and constructed with trusses, this live load needs to be applied only to those portions of the bottom chord where there are two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high or greater by 2 feet wide or greater, located within the plane of the truss. The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following criteria is met:

¹The attic area is accessible by a pull-down stairway or framed opening in accordance with Section R807.1; and

²The truss has a bottom chord pitch less than 2:12.

³Attic spaces served by a fixed stair shall be designed to support the minimum live load specified for sleeping rooms.

⁴Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.))

AMENDATORY SECTION (Amending WSR 09-04-023, filed 1/27/09, effective 7/1/09)

WAC 51-51-0302 Section R302--((Location on lot)) Fire-resistant construction.

R302.1 Exterior walls. ((Exterior walls with a fire separation distance of 3 feet (914 mm) or less shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections shall not extend to a point closer than 2 feet (610 mm) from the line used to determine the fire separation distance.

EXCEPTION: Detached garages accessory to a dwelling located within 2 feet of a lot line may have roof eave projections not exceeding 4 inches.

Projections extending into the fire separation distance shall have not less than one-hour fire-resistive construction on the underside. The above provisions shall not apply to walls which are perpendicular to the line used to determine the fire separation distance.

EXCEPTIONS: 1. Tool and storage sheds, playhouses and similar structures exempted from permits by Section R105.2 are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
2. Eave projections into the fire separation distance do not require one-hour fire-resistive construction where no openings are provided in the eaves, including openings for ventilation.))

Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1.

EXCEPTIONS: 1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of dwellings and accessory structures located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

Table R302.1
Exterior Walls

<u>Exterior Wall Element</u>		<u>Minimum Fire-Resistance Rating</u>	<u>Minimum Fire Separation Distance</u>
<u>Walls</u>	<u>(Fire-resistance rated)</u>	<u>1-hour tested in accordance with ASTM E 119 or UL 263 with exposure from both sides</u>	<u>< 5 feet</u>
	<u>(Not fire-resistance rated)</u>	<u>0 hours</u>	<u>> 5 feet</u>
<u>Projections</u>	<u>(Fire-resistance rated)</u>	<u>1 hour on the underside^{ab}</u>	<u>> 2 feet to 5 feet</u>
	<u>(Not fire-resistance rated)</u>	<u>0 hours</u>	<u>5 feet</u>
<u>Openings in Walls</u>	<u>Not allowed</u>	<u>N/A</u>	<u>< 3 feet</u>
	<u>25% maximum of wall area</u>	<u>0 hours</u>	<u>3 feet</u>
	<u>Unlimited</u>	<u>0 hours</u>	<u>5 feet</u>
<u>Penetrations</u>	<u>All</u>	<u>Comply with Section R302.4</u>	<u>< 5 feet</u>
		<u>None required</u>	<u>5 feet</u>

For IS: 1 foot = 304.8 mm. N/A = Not Applicable

a. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.

b. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided no gable vent openings are installed.

R302.2 (~~Openings~~). ~~Openings shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance of 3 feet (914 mm) or less. Openings, including openings for ventilation, shall be limited to 25% of the exterior wall area with a fire separation distance between 3 feet (914 mm) to less than 5 feet (1524 mm). This distance shall be measured perpendicular to the line used to determine the fire separation distance.~~

EXCEPTIONS: ~~1. Openings shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.~~
~~2. Foundation vents installed in compliance with this code are permitted.~~

R302.3 Penetrations. ~~Penetrations located in the exterior wall of a dwelling with a fire separation distance of 3 feet (914 mm) or less shall be protected in accordance with Section R317.3.~~

EXCEPTION: ~~Penetrations shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance:))~~

Townhouses. Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302.1 for exterior walls.

EXCEPTION: (1) A common 1-hour fire-resistance rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses where an automatic sprinkler system is installed in accordance with NFPA 13 D, if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with chapter 296-46B WAC or electrical code as adopted by the local jurisdiction. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

(2) A common 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with chapter 296-46B WAC or electrical code as adopted by the local jurisdiction. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

R302.2.1 Continuity. The fire-resistance-rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire-resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.

Where a story extends beyond the exterior wall of a story below:

1. The fire-resistance-rated wall or assembly shall extend to the outside edge of the upper story; or

2. The underside of the exposed floor-ceiling assembly shall be protected as required for projections in Section R302.

R302.2.4 Structural independence. Each individual townhouse shall be structurally independent.

EXCEPTIONS:

1. Foundation supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit may be fastened to the common wall framing.
3. Nonstructural wall and roof coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common 2-hour fire-resistance-rated wall as provided in Section R302.2.
6. Floor sheathing may fasten to the floor framing of both units.

AMENDATORY SECTION (Amending WSR 04-01-109, filed 12/17/03, effective 7/1/04)

WAC 51-51-0303 Section R303--Light, ventilation and heating.

R303.1 Natural Light. All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms.

EXCEPTION:

The glazed areas need not be installed in rooms where artificial light is provided capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.

R303.1.1 Adjoining Rooms. For the purposes of determining light requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room but not less than 25 square feet (2.3 m²).

EXCEPTION:

Openings required for light shall be permitted to open into a thermally isolated sunroom addition or patio cover, provided that there is an openable area between the adjoining room and the sunroom addition or patio cover of not less than one-tenth of the floor area of the interior room but not less than 20 square feet (2 m²).

R303.2 Minimum Ventilation Performance. Every space intended for

human occupancy shall be equipped with source specific and whole house ventilation systems designed and installed as specified in Sections R1507 and R1508.

R303.3 Bathrooms. This section is not adopted.

R303.4.1 Intake Openings. Mechanical and gravity outdoor air intake openings shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Where a source of contaminant is located within 10 feet (3048 mm) of an intake opening, such opening shall be located a minimum of 3 feet (914 mm) below the contaminant source.

For the purposes of this section, the exhaust from dwelling unit toilet rooms, bathrooms and kitchens shall not be considered as hazardous or noxious.

R303.6 Stairway Illumination. All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Stairway illumination shall receive primary power from the building wiring. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. For interior stairs the artificial light sources shall be capable of illuminating treads and landings to levels not less than 1 foot-candle (11 lux) measured at the center of treads and landings. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway.

EXCEPTION: An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section.

R303.6.1 Light Activation. Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting outlet where the stairway has six or more risers. The illumination of exterior stairways shall be controlled from inside the dwelling unit.

EXCEPTION: Lights that are continuously illuminated or automatically controlled.

R303.8.1 Definitions. For the purposes of this section only, the following definitions apply.

DESIGNATED AREAS are those areas designated by a county to be an urban growth area in chapter 36.70A RCW and those areas designated by the U.S. Environmental Protection Agency as being in nonattainment for particulate matter.

SUBSTANTIALLY REMODELED means any alteration or restoration of a building exceeding 60 percent of the appraised value of such building within a 12 month period. For the purpose of this section, the appraised value is the estimated cost to replace the

building and structure in kind, based on current replacement costs.

R303.8.2 Primary Heating Source. Primary heating sources in all new and substantially remodeled buildings in designated areas shall not be dependent upon wood stoves.

R303.8.3 Solid Fuel Burning Devices. No used solid fuel burning device shall be installed in new or existing buildings unless such device is United States Environmental Protection Agency certified or a pellet stove either certified or exempt from certification by the United States Environmental Protection Agency.

EXCEPTION: Antique wood cook stoves and heaters manufactured prior to 1940.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0311 Section R311--Means of egress.

~~((R311.1 General. Stairways, ramps, exterior exit balconies, hallways and doors shall comply with this section.))~~ **R311.4 Vertical egress.** Egress from habitable levels including habitable attics and basements not provided with an egress door in accordance with Section R311.2 shall be by ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

EXCEPTION: Stairs or ladders within an individual dwelling unit used for access to areas of 200 square feet (18.6 m²) or less, and not containing the primary bathroom or kitchen.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0313 Section R313--~~((Smoke alarms))~~ Automatic fire sprinkler systems.

~~((R313.2 Location. Smoke alarms shall be installed in the following locations:~~

- ~~1. In each sleeping room.~~
- ~~2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.~~
- ~~3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story~~

~~below the upper level.~~

~~4. In napping areas in family child day care homes.~~

~~When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.)) **R313.1 Automatic Fire Sprinkler Systems.** This section is not adopted.~~

NEW SECTION

WAC 51-51-0314 Section R314--Smoke alarms.

R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

4. In napping areas in family child day care homes.

When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.

R314.3.1 Alterations, Repairs and Additions. When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms as required for new dwellings.

EXCEPTIONS:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck are exempt from the requirements of this section.
2. Installation, alteration or repairs of plumbing, electrical or mechanical systems are exempt from the requirements of this section.

NEW SECTION

WAC 51-51-0315 Section R315--Carbon monoxide alarms.

R315.1 Carbon Monoxide Alarms. For new construction, an approved carbon monoxide alarm shall be installed by January 1, 2011, outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units. In a building where a tenancy exists, the tenant shall maintain the CO alarm as specified by the manufacturer including replacement of the batteries.

R315.2 Existing Dwellings. Existing dwellings shall be equipped with carbon monoxide alarms by July 1, 2011.

EXCEPTION: Owner-occupied detached one-family dwellings legally occupied prior to July 1, 2010.

R315.3 Alarm Requirements. Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-0317 ((Section R317--Dwelling unit separation.)) Reserved.

~~((**R317.2 Townhouses.** Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302 for exterior walls.~~

EXCEPTION: ~~A common 2-hour fire-resistance-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. Penetrations of electrical outlet boxes shall be in accordance with Section R317.3.~~

~~**R317.2.1 Continuity.** The fire-resistance-rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire-resistance-rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.~~

~~Where a story extends beyond the exterior wall of a story below:~~

- ~~1. The fire-resistance-rated wall or assembly shall extend to the outside edge of the upper story; or~~
- ~~2. The underside of the exposed floor-ceiling assembly shall be protected as required for projections in Section R302.~~

~~**R317.2.4 Structural independence.** Each individual townhouse shall be structurally independent.~~

EXCEPTIONS: ~~1. Foundation supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit may be fastened to the common wall framing.~~

- ~~3. Nonstructural wall coverings.~~
- ~~4. Flashing at termination of roof covering over common wall.~~
- ~~5. Townhouses separated by a common 2-hour fire-resistive rated wall as provided in Section R317.2.~~
- ~~6. Floor sheathing may fasten to the floor framing of both units.))~~

NEW SECTION

WAC 51-51-0322 Section R322--Flood resistant construction.

R322.2.1 Elevation Requirements.

1. Buildings and structures in flood hazard areas not designated as Coastal A Zones, shall have the lowest floor elevated to or above the design flood elevation, or a greater elevation as designated by local ordinance.

2. Buildings and structures in flood hazard areas designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or to the design flood elevation, whichever is higher.

3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM, or at least 2 feet (610 mm) if a depth number is not specified.

4. Basement floors that are below grade on all sides shall be elevated to or above the design flood elevation.

EXCEPTION: Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R322.2.2.

AMENDATORY SECTION (Amending WSR 08-01-103, filed 12/18/07, effective 4/1/08)

WAC 51-51-0403 Section R403--Footings.

R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, wood foundations, or other approved structural systems which shall be of sufficient design to accommodate all loads specified in Section R301 and to transmit the resulting loads to the supporting soil within the limitations determined from the characteristics of the soil. Footings shall be supported on undisturbed natural soil or engineered fill. Foundation walls complying with Section R404 or stem walls complying with Section R403.1.3 shall be permitted to support exterior walls, exterior braced wall lines and exterior braced wall panels provided they are supported by continuous

footings.

R403.1.2 ((Braced Wall Panels)) Continuous Footing in Seismic Design Categories D₀, D₁ and D₂. The braced wall panels at exterior ((and interior)) walls of buildings located in Seismic Design Categories D₀, D₁ and D₂ shall be supported by ((foundations)) continuous footings. All required interior braced wall panels shall be supported on footings at intervals not exceeding 50 feet (15,240 mm).

((EXCEPTIONS: 1. In buildings in Seismic Design Categories D₀ and D₁, and in one-story buildings in Seismic Design Category D₂, interior braced wall panels are not required to be supported by foundations, provided no building plan dimension perpendicular to the interior braced wall lines is greater than 50 feet.
2. In two-story buildings in Seismic Design Category D₂, interior braced wall panels are not required to be supported by foundations, provided all of the following conditions are met:
2.1. No building plan dimension perpendicular to the interior braced wall lines exceeds 50 feet;
2.2. The distances between braced wall lines do not exceed twice the building width measured parallel to the braced wall lines;
2.3. The braced wall panels at the first story are continuously supported by floor joists, blocking or floor beams; and
2.4. The heights of braced wall panels in under-floor spaces do not exceed 48 inches (1219 mm).

R403.1.2.1 Foundations. Foundations at braced wall panels shall be constructed of masonry or concrete foundation walls in accordance with Sections R402 and R404, and masonry or concrete footings in accordance with Sections R402 and R403.

EXCEPTIONS: 1. In under-floor spaces, cripple walls shall be permitted to substitute for masonry or concrete foundation walls provided they comply with the following:
a. They are located directly below the interior braced wall panels above;
b. They are braced in accordance with Sections R602.10.2 and R602.10.11.4 for cripple wall bracing; and
c. They are supported by footings complying with Sections R402 and R403, except that the footing of a foundation supporting an interior braced wall panel is not required to be continuous.
2. Footings of foundations supporting interior braced wall panels are not required to be continuous but shall be constructed beyond the ends of foundation walls, stem walls and cripple walls supporting braced wall panels for a minimum distance of 4 inches and a maximum distance of the footing thickness. The footing extension is not required at intersections with other footings.

R403.1.3 Seismic reinforcing in Seismic Design Categories D₀, D₁ and D₂. Concrete footings of buildings assigned to Seismic Design Categories D₀, D₁ and D₂ shall comply with this section and have minimum reinforcement as specified by Section R403.1.3.1 or R403.1.3.2. Bottom reinforcement shall be located a minimum of 3 inches (76 mm) from the bottom of the footing.

Where a construction joint is created between a concrete footing and a concrete stem wall, minimum vertical reinforcement of one No. 4 bar shall be provided at not more than 4 feet (1219 mm) on center. The bars shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook, and extend into the stem wall the lesser of 2 inches (49 mm) clear of the top of the wall and 14 inches (357 mm).

Where a solidly grouted masonry stem wall is supported on a concrete footing, minimum vertical reinforcement of one No. 4 bar shall be provided at not more than 4 feet (1219 mm) on center. The bars shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook, and extend into the stem wall to 2 inches (49 mm) clear of the top of the wall.

Masonry stem walls without solid grout and vertical reinforcing are not permitted.

Concrete and masonry stem walls shall comply with the requirements of Section R404 for foundation walls.

EXCEPTION: ~~_____~~ In detached one- and two-family dwellings of light-framed construction and three stories or less above grade, plain concrete footings supporting walls, columns or pedestals are permitted.

~~R403.1.3.1 Foundation stem walls.~~ ~~Foundation stem walls shall have installed a minimum of one No. 4 bar within 12 inches (305 mm) of the top of the stem wall and one No. 4 bar located 3 inches (76 mm) to 4 inches (102 mm) from the bottom of the footing.~~

~~R403.1.4 Minimum depth.~~ ~~All exterior footings shall be placed at least 12 inches (305 mm) below the undisturbed ground surface. Where applicable, the depth of footings shall also comply with Sections R403.1.4.1 through R403.1.4.2.~~

~~R403.1.4.1 Frost protection.~~ ~~Except where otherwise protected from frost, foundation walls, piers and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:~~

- ~~1. Extend below the frost line specified in Table R301.2(1);~~
- ~~2. Construct in accordance with Section R403.3;~~
- ~~3. Construct in accordance with ASCE 32; or~~
- ~~4. Erect on solid rock.~~

EXCEPTIONS: ~~_____~~

- ~~1. Protection of freestanding accessory structures with an area of 600 square feet (56 m²) or less and an eave height of 10 feet (3048 mm) or less shall not be required;~~
- ~~2. Protection of freestanding accessory structures with an area of 400 square feet (37 m²) or less, of other than light-framed construction, with an eave height of 10 feet (3048 mm) or less shall not be required;~~
- ~~3. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.~~

~~Footings shall not bear on frozen soil unless such frozen condition is of a permanent character.~~

~~R403.1.6 Anchorage at braced wall panels.~~ ~~Where braced wall panels are supported by monolithic slabs, footings or foundations, the wood sole plates, wood sill plates or cold-formed steel bottom tracks shall be anchored to the slab cast monolithically with a footing, footing or foundation in accordance with Section R403.1.6.~~

~~The wood sole or sill plate shall be anchored to the monolithic slab, footing or foundation with anchor bolts spaced a maximum of 6 feet (1829 mm) on center. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) and not less than seven bolt diameters from each end of the plate section. Bolts shall be at least 1/2 inch (13 mm) in diameter and shall extend a minimum of 7 inches (178 mm) into masonry or concrete. A nut and washer shall be tightened to a snug-tight condition on each bolt to the plate.~~

~~Cold-formed steel framing systems shall be fastened to wood sill plates or anchored directly to the foundation in accordance with Section R505.3.1 or R603.3.1.~~

EXCEPTIONS: ~~_____~~

- ~~1. Foundation anchorage, spaced as required to provide equivalent anchorage to 1/2-inch-diameter (13 mm) anchor bolts;~~
- ~~2. Walls 24 inches (610 mm) in total length or shorter connecting offset braced wall panels shall be anchored to the footing or foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels as specified in Figure R602.10.5 at the corners;~~
- ~~3. Walls 12 inches (305 mm) in total length or shorter connecting offset braced wall panels shall be permitted to be connected to the footing or foundation without anchor bolts. The wall shall be attached to adjacent braced wall panels as specified in Figure R602.10.5 at the corners.~~

~~R403.1.6.1 Foundation anchorage in Seismic Design Categories C, D_v, D_r and D₂.~~ ~~In addition to the requirements of Section R403.1.6, the~~

~~following requirements shall apply to wood light-frame structures in Seismic Design Categories D_v, D_i and D₂ and wood light-frame townhouses in Seismic Design Category C.~~

~~1. Bearing walls and interior braced wall sill plates shall be anchored to footings or foundations with anchor bolts spaced at not more than 6 feet (1829 mm) on center and located within 12 inches (305 mm) from the ends of each plate section when supported on a continuous foundation.~~

~~2. The maximum anchor bolt spacing shall be 4 feet (1219 mm) for buildings over two stories in height.~~

~~3. Plate washers complying with Section R602.11.1 shall be provided for all anchor bolts over the full length of required braced wall lines. Properly sized cut washers shall be permitted for anchor bolts in wall lines not containing braced wall panels or in braced wall lines.~~

~~4. Stepped cripple walls shall conform to Section R602.11.3.~~

~~5. Where wood foundations in accordance with Sections R402.1 and R404.2 are used, the force transfer shall have a capacity equal to or greater than the connections required by Section R602.11.1 or the braced wall panel shall be connected to the wood foundations in accordance with the braced wall panel-to-floor fastening requirements of Table 602.3(1).)~~

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-0404 ((Section R404--Foundation and retaining walls.)) Reserved.

~~((R404.1 Concrete and masonry foundation walls. Concrete and masonry foundation walls shall be selected and constructed in accordance with the provisions of Section R404 or in accordance with ACI 318, ACI 332, NCMA TR68-A or ACI 530/ASCE 5/TMS 402 or other approved structural standards. When ACI 318, ACI 332 or ACI 530/ASCE 5/TMS 402 or the provisions of Section R404 are used to design concrete or masonry foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for the design, unless otherwise required by the state law of the jurisdiction having authority.~~

~~Tables R404.1(1), R404.1(2), and R404.1(3) are not adopted.~~

**TABLE R404.1.1(3)
10-INCH MASONRY FOUNDATION WALLS WITH
REINFORCING
WHERE $d > 6.75$ INCHES***

~~(no changes to Table R404.1.1(3) or footnotes)~~

R404.3 Wood sill plates. ~~Wood sill plates shall be a minimum of 2-inch by 4-inch nominal lumber. Sill plate anchorage shall be in~~

~~accordance with Sections R403.1.6 and R602.11.))~~

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0408 Section R408--Under-floor space.

R408.1 Ventilation. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall have ventilation openings through foundation walls or exterior walls.

R408.2 Openings for under-floor ventilation. The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m²) for each 300 square feet (28 m²) of under-floor area. ~~((In addition, a ground cover that meets the requirements of Section 502.1.6.7 of the Washington State Energy Code (chapter 51-11 WAC) shall be installed.))~~ One ventilating opening shall be within 3 feet (914 mm) of each corner of the building, except one side of the building shall be permitted to have no ventilation openings. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed 1/4 inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grill or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension being 1/8 inch (3.2 mm).

EXCEPTION: The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class I vapor retarder material and the required openings are placed to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited. If the installed ventilation is less than 1/300, or if operable louvers are installed, a radon vent shall be installed to originate from a point between the ground cover and soil. The radon vent shall be installed in accordance with the requirements of Appendix F (Radon) of this code.

R408.3 Unvented crawl space. Ventilation openings in under-floor spaces specified in Sections R408.1 and R408.2 shall not be required where:

1. Exposed earth is covered with a continuous Class I vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall; and a radon system shall be installed that meets the requirements of Appendix F (Radon) of this code.
2. Continuously operated mechanical exhaust ventilation is provided at a rate equal to 1 cubic foot per minute (0.47 L/s) for

each 50 square feet (4.7 m²) of crawlspace floor area. Exhaust ventilation shall terminate to the exterior.

EXCEPTION: Plenum in existing structures complying with Section M1601.4, if under-floor space is used as a plenum.

NEW SECTION

WAC 51-51-0502 Section R502--Wood floor framing.

R502.2.2.2 Alternate Deck Ledger Connections. Deck ledger connections not conforming to Table R502.2.2.1 shall be attached with approved fasteners having equivalent withdrawal capacity or be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.

R502.2.2.3 Deck Lateral Load Connections. The lateral load connection required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

EXCEPTION: Decks not more than 30 inches above grade at any point may be unattached.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-0602 Section R602--Wood wall framing.

~~((R602.3 Design and construction. Exterior walls of wood light-framed construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.~~

~~**R602.3.4 Bottom (sole) plate.** Studs shall have full bearing on a 2-inch nominal (38 mm) or larger plate or sill having a width at least equal to the width of the studs.))~~

R602.9 Foundation cripple walls. Foundation cripple walls shall be

framed of studs not smaller than the studding above. When exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional story.

Cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Sections R403.1.2 and (~~(R403.1.2.1)~~) R602.10.7.1 with a stud height less than 14 inches (356 mm) shall be sheathed on at least one side with a wood structural panel that is fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. Cripple walls (~~((supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1))~~) shall be supported on continuous footings or foundations.

~~((R602.10 Wall bracing. All exterior walls shall be braced in accordance with this section. In addition, interior braced wall lines shall be provided in accordance with Section 602.10.1.1. For buildings in Seismic Design Categories D₀, D₁ and D₂, walls shall be constructed in accordance with the additional requirements of Sections R602.10.11 through R602.11.3.))~~

EXCEPTION:

Footings supporting cripple walls used to support interior braced wall panels as required in Sections R403.1.2 and R602.10.7.1 shall be continuous for the required length of the cripple wall and constructed beyond the cripple wall for a minimum distance of 4 inches and a maximum distance of the footing thickness. The footings extension is not required at intersections with other footings.

R602.10.1.2 Length of bracing. The length of bracing along each braced wall line shall be the greater of that required by the design wind speed and braced wall line spacing in accordance with Table R602.10.1.2(1) as adjusted by the factors in the footnotes or the Seismic Design Category and braced wall line length in accordance with Table R602.10.1.2(2) as adjusted by the factors in Table R602.10.1.2(3). Braced wall panel locations shall comply with the requirements of Section R602.10.1.4. Only walls that are parallel to the braced wall line shall be counted toward the bracing requirement of that line, except angled walls shall be counted in accordance with Section R602.10.1.3. In no case shall the minimum total length of bracing in a braced wall line, after all adjustments have been taken, be less than 48 inches (1219 mm) total.

R602.10.1.5 Braced wall line spacing for Seismic Design Categories D₀, D₁ and D₂. Spacing between braced wall lines in each story shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions.

EXCEPTION:

In one-story and two-story buildings, spacing between two adjacent braced wall lines shall not exceed 35 feet (10,668 mm) on center in order to accommodate one single room not exceeding 900 square feet (84 m²) in each dwelling unit or accessory structure. Spacing between all other braced wall lines shall not exceed 25 feet (7 620 mm). A spacing of 35 feet (10,668 mm) or less shall be permitted between braced wall lines where the length of wall bracing required by Table R602.10.1.2(2) is multiplied by the appropriate adjustment factor from Table R602.10.1.5, the length-to-width ratio for the floor/roof diaphragm does not exceed 3:1, and the top plate lap splice face nailing is twelve 16d nails on each side of the splice.

R602.10.2 Cripple wall bracing.

~~((R602.10.2.1 Seismic Design Categories Other than D₂. In Seismic~~

~~Design Categories other than D₂, cripple walls supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1 shall be braced with an amount and type of bracing as required for the wall above in accordance with Table R602.10.1 with the following modifications for cripple wall bracing:~~

~~1. The percent bracing amount as determined from Table R602.10.1 shall be increased by 15 percent; and~~

~~2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).~~

~~**R602.10.2.2 Seismic Design Category D₂.** In Seismic Design Category D₂, cripple walls supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1 shall be braced in accordance with Table R602.10.1.)~~

R602.10.2.3 Redesignation of cripple walls. In any Seismic Design Category, cripple walls are permitted to be redesignated as the first story walls for purposes of determining wall bracing requirements. If the cripple walls are redesignated, the stories above the redesignated story shall be counted as the second and third stories, respectively.

~~((**R602.10.5 Continuous wood structural panel sheathing.** When continuous wood structural panel sheathing is provided in accordance with Method 3 of Section R602.10.3 on all sheathable areas of all exterior walls including areas above and below openings, braced wall panel lengths are not required to be in accordance with Section R602.10.4 provided they are in accordance with Table R602.10.5. Wood structural panel sheathing shall be installed at corners in accordance with Figure R602.10.5. The bracing percentages in Table R602.10.1 for Method 3 shall be permitted to be multiplied by a factor of 0.9 for exterior walls with a maximum opening height that does not exceed 85 percent of the wall height or a factor of 0.8 for exterior walls with a maximum opening height that does not exceed 67 percent of the wall height.~~

TABLE R602.10.5
LENGTH REQUIREMENTS FOR BRACED WALL PANELS IN A CONTINUOUSLY SHEATHED WALL^{NOTE}
~~(no proposed changes to contents of Table R602.10.5)~~

~~For IS: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 pound per square foot = 0.0479 kN/m².~~

~~a. Linear interpolation shall be permitted.~~

~~b. Full-height sheathed wall segments on either side of garage openings that support roofs of light-framed construction only, with roof covering dead loads of 3 psf or less shall be permitted to have a 4:1 height-to-width ratio.~~

~~c. Walls on either or both sides of openings in garages attached to fully sheathed dwellings shall be permitted to be built in accordance with Section R602.10.6.2 and Figure R602.10.6.2 except that a single sill plate shall be permitted and two anchor bolts shall be placed at 1/3 points. In addition, tie-down devices shall not be required and the vertical wall segment shall have a~~

~~maximum 6:1 height-to-width ratio (with height being measured from top of header to the bottom of the sill plate). This option shall be permitted for the first story of two-story applications in Seismic Design Categories A through C.~~

~~R602.10.6 Alternate braced wall panel construction methods.~~
~~Alternate braced wall panels shall be constructed in accordance with Sections R602.10.6.1 and R602.10.6.2.~~

~~R602.10.6.1 Alternate braced wall panels.~~
~~Alternate braced wall panels constructed in accordance with one of the following provisions shall be permitted to replace each 4 feet (1219 mm) of braced wall panel as required by Section R602.10.4. The maximum height and minimum width of each panel shall be in accordance with Table R602.10.6.~~

~~1. In one-story buildings, each panel shall be sheathed on one face with 3/8-inch minimum thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table R602.3(1) and blocked at all wood structural panel sheathing edges. Two anchor bolts installed in accordance with Figure R403.1(1) shall be provided in each panel. Anchor bolts shall be placed in from each end of the panel a horizontal distance of one-fourth the panel width. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an uplift capacity in accordance with Table R602.10.6. The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. When the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.~~

~~2. In the first story of two-story buildings, each braced wall panel shall be in accordance with Item 1 above, except that the following:~~

~~2.1 The wood structural panel sheathing shall be provided on both faces;~~

~~2.2 Sheathing edge nailing spacing shall not exceed 4 inches on center; and~~

~~2.3 Anchor bolts shall be placed at the center of the panel width and in from each end of the panel a horizontal distance of one-fifth the panel width (three total).~~

~~R602.10.7 Panel joints.~~
~~All vertical joints of panel sheathing shall occur over, and be fastened to, common studs. Horizontal joints in braced wall panels shall occur over, and be fastened to, common blocking of a minimum 2 inches in nominal thickness.~~

EXCEPTION: ~~Blocking is not required behind horizontal joints in Seismic Design Categories A and B and detached dwellings in Seismic Design Category C when constructed in accordance with Section R602.10.3, braced-wall-panel construction Method 3 and Table R602.10.1, Method 3, or where permitted by the manufacturer's installation requirements for the specific sheathing material.~~

~~**R602.10.8 Connections.** Braced wall panel bottom (sole) plates shall be fastened to the floor framing and top plates shall be connected to the framing above in accordance with Table R602.3(1). Sill plates shall be fastened to the footing, foundation or slab in accordance with Sections R403.1.6 and R602.11. Where joists are perpendicular to the braced wall lines above, blocking shall be provided under and in line with the braced wall panels. Where joists are perpendicular to braced wall lines below, blocking shall be provided over and in line with the braced wall panels. Where joists are parallel to braced wall lines above or below, a rim joist or other parallel framing member shall be provided at the wall to permit fastening per Table R602.3(1). For buildings in Seismic Design Categories D_s, D_r and D_r, braced wall panels shall also be fastened in accordance with Section R602.11.2.)~~

~~**R602.10.7.1 Braced wall panel support for Seismic Design Category D_s.** In one-story buildings located in Seismic Design Category D_s, braced wall panels shall be supported on continuous foundations at intervals not exceeding 50 feet (15,240 mm). In two-story buildings located in Seismic Design Category D_s, all braced wall panels shall be supported on continuous foundations.~~

~~**R602.10.9 ((Interior braced wall support.** This section is not adopted. See Section R403.1.2.~~

~~**R602.10.10 Design of structural elements.** Where a building, or portion thereof, does not comply with one or more of the bracing requirements in Sections R602.10 through R602.10.9, those portions shall be designed and constructed in accordance with accepted engineering practice.~~

~~**R602.10.11 Bracing in Seismic Design Categories D_s, D_r and D_r.** Structures located in Seismic Design Categories D_s, D_r and D_r shall have exterior and interior braced wall lines.~~

~~**R602.10.11.1 Braced wall line spacing.** Spacing between braced wall lines in each story shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions.~~

EXCEPTION: ~~In one- and two-story buildings two adjacent braced wall lines shall not exceed 35 feet (10,663 mm) on center in order to accommodate an area not exceeding 900 square feet (84 m²) in each dwelling unit. Spacing between all other braced wall lines shall not exceed 25 feet (7620 mm).~~

~~**R602.10.11.2 Braced wall panel location.** Exterior braced wall lines shall be provided with a braced wall panel located at each end of the braced wall line.~~

EXCEPTION: ~~For braced wall panel construction Method 3 of Section R602.10.3, the braced wall panel shall be permitted to begin no more than 8 feet (2438 mm) from each end of the braced wall line provided one of the following is satisfied:~~

- ~~1. A minimum 24-inch-wide (610 mm) panel is applied to each side of the building corner and the two 24-inch-wide (610 mm) panels at the corner shall be attached to framing in accordance with Figure R602.10.5; or~~
- ~~2. The end of each braced wall panel closest to the corner shall have a tie-down device fastened to the stud at the edge of the braced wall panel closest to the corner and to the foundation or framing below. The tie-down device shall be capable of providing an uplift allowable design value of at least 1,800 pounds (8 kN). The tie-down device shall be installed in accordance with the manufacturer's recommendations.~~

~~**R602.10.11.3 Collectors.** A designed collector shall be provided if a braced wall panel is not located at each end of a braced wall line as indicated in Section R602.10.11.2 or, when using the Section R602.10.11.2 Exception, if a braced wall panel is more than 8 feet (2438 mm) from each end of a braced wall line.~~

~~**R602.10.11.4 Cripple wall bracing.** In addition to the requirements of Section R602.10.2, where interior braced wall panels occur without a foundation below, the length of parallel exterior cripple wall bracing shall be one and one-half times the length required by Table R602.10.1. Where cripple walls braced using Method 3 of Section R602.10.3 cannot provide this additional length, the capacity of the sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) on center.~~

~~**R602.10.11.5 Sheathing attachment.** Adhesive attachment of wall sheathing shall not be permitted in Seismic Design Categories C, D_v, D_s and D_e.~~

~~**R602.11 Framing and connections for Seismic Design Categories D_v, D_s and D_e.** The framing and connection details of buildings located in Seismic Design Categories D_v, D_s and D_e shall be in accordance with Sections R602.11.1 through R602.11.3.~~

~~**R602.11.1 Wall anchorage.** Braced wall line sill plates shall be anchored to concrete or masonry foundations in accordance with Sections R403.1.6 and R602.11. For all buildings in Seismic Design Categories D_v, D_s and D_e and townhouses in Seismic Design Category C, plate washers, a minimum of 0.229 inch by 3 inches by 3 inches (5.8 mm by 76 mm by 76 mm) in size, shall be installed between the foundation sill plate and the nut. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch (5 mm) larger than the bolt diameter and a slot length not to exceed 1-3/4 inches (44 mm), provided a standard cut washer is placed between the plate washer and the nut.~~

~~**R602.11.2 Interior braced wall panel connections.** Interior braced wall panels shall be fastened to floor and roof framing in accordance with Table R602.3(1), to required foundations in accordance with Section R602.11.1, and in accordance with the following requirements:~~

~~1. Floor joists parallel to the top plate shall be toe-nailed to the top plate with at least 8d nails spaced a maximum of 6 inches (152 mm) on center.~~

~~2. Top plate laps shall be face-nailed with at least eight 16d nails on each side of the splice.~~

~~**R602.11.3 Stepped foundations.** Where stepped foundations occur, the following requirements apply:~~

~~1. Where the height of a required braced wall panel that extends from foundation to floor above varies more than 4 feet (1220 mm), the braced wall panel shall be constructed in accordance with Figure R602.11.3.~~

~~2. Where the lowest floor framing rests directly on a sill bolted to a foundation not less than 8 feet (2440 mm) in length along a line of bracing, the line shall be considered as braced. The double plate of the cripple stud wall beyond the segment of footing that extends to the lowest framed floor shall be spliced by extending the upper top plate a minimum of 4 feet (1219 mm) along the foundation. Anchor bolts shall be located a maximum of 1 foot and 3 feet (305 and 914 mm) from each end of the plate section at the step in the foundation.~~

~~3. Where cripple walls occur between the top of the foundation and the lowest floor framing, the bracing requirements for a story shall apply.~~

~~4. Where only the bottom of the foundation is stepped and the lowest floor framing rests directly on a sill bolted to the foundations, the requirements of Section R602.11.1 shall apply.))~~

Cripple wall bracing. In Seismic Design Categories other than D_s, cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in R403.1.2 and R602.10.7.1 shall be braced with a length and type of bracing as required for the wall above in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2) with the following modifications for cripple wall bracing:

1. The length of bracing as determined from Tables R602.10.1.2(1) and R602.10.1.2(2) shall be multiplied by a factor of 1.15, and

2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).

R602.10.9.1 Cripple wall bracing in Seismic Design Categories D_s, D₁ and D₂. In addition to the requirements of Section R602.10.9, where braced wall lines at interior walls occur without a continuous foundation below, the length of parallel exterior cripple wall bracing shall be 1 1/2 times the length required by Tables R602.10.1.2(1) and R602.10.1.2(2). Where cripple walls braced using Method WSP of Section R602.10.2 cannot provide this additional length, the capacity of the sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) on center.

In Seismic Design Category D_s, cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Sections R403.1.2 and R602.10.7.1 shall be braced in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2).

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0613 Section ((R613)) R612--Exterior windows and glass doors.

~~((R613.4))~~ **R612.6 Testing and labeling.** Exterior windows and sliding doors shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicated compliance with AAMA/WDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R613.6.

EXCEPTION:

1. Decorative glazed openings.
2. Custom exterior windows and doors manufactured by a small business shall be exempt from all testing requirements in Section R-613 of the International Residential Code provided they meet the applicable provisions of Chapter 24 of the International Building Code.

NEW SECTION

WAC 51-51-0702 Section R702--Interior Covering.

R702.5 Other finishes. Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hardboard paneling less than 1/4-inch (6 mm) nominal thickness shall not have less than a 3/8-inch (10 mm) gypsum board backer. Wood veneer paneling not less than 1/4-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to ANSI/AHA A135.5. All structural panel components within the conditioned space such as plywood, particle board, wafer board and oriented strand board shall be identified as "EXPOSURE 1," "EXTERIOR" or "HUD-APPROVED."

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-0703 Section R703--Exterior covering.

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.8.

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section 601.3 of this code.

EXCEPTIONS:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Section R703.2 and R703.8, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
 - 2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
 - 2.2. Exterior wall envelope test assemblies shall be at least 4 feet (1219 mm) by 8 feet (2438 mm) in size.
 - 2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299Pa).
 - 2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate: Control joints in the exterior wall envelope; joints at the perimeter of opening penetration; or intersections of terminations with dissimilar materials.
3. The requirement for a means of drainage shall not be construed to mean an air space cavity under the exterior cladding for an exterior wall clad with panel or lapped siding made of plywood, engineered wood, hardboard, or fiber cement. A water-resistive barrier as required by Section R703.2 and Table R703.4 will be required on exterior walls.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-0806 Section R806--Roof ventilation.

R806.4 ((Conditioned)) Unvented attic assemblies. ((This section is not adopted.)) Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all of the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.
2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
3. Where wood shingles or shakes are used, a minimum 1/4-inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
5. Either items a, b or c below shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
 - a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.
 - b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per Washington climate zone for condensation control.
 - i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.

c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per Washington climate zone for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.

NEW SECTION

WAC 51-51-0903 Section R903--Weather protection.

R903.4.1 Overflow drains and scuppers. Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow scuppers having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be installed in the adjacent parapet walls with the inlet flow located 2 inches (51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the plumbing code. Overflow drains shall discharge to an approved location.

NEW SECTION

WAC 51-51-1001 Section R1001--Masonry fireplaces.

R1001.7.1 Damper. Masonry fireplaces shall be equipped with a ferrous metal damper located at least 8 inches (203 mm) above the top of the fireplace opening. Dampers shall be installed in the fireplace or the chimney venting the fireplace, and shall be operable from the room containing the fireplace.

Fireplaces shall be provided with each of the following:

1. Tightly fitting flue dampers, operated by a readily accessible manual or approved automatic control.

EXCEPTION: Fireplaces with gas logs shall be installed in accordance with the International Mechanical Code Section 901, except that the standards for liquefied petroleum gas installations shall be NFPA 58 (Liquefied Petroleum Gas Code) and NFPA 54 (National Fuel Gas Code).

2. An outside source for combustion air ducted into the

firebox. The duct shall be at least 6 square inches, and shall be provided with an operable outside air duct damper.

EXCEPTION: Washington certified fireplaces shall be installed with the combustion air systems necessary for their safe and efficient combustion and specified by the manufacturer in accordance with the Washington State Building Standard 31-2 (WAC 51-50-31200) and IBC Section 2114 (WAC 51-50-2114).

3. Site built fireplaces shall have tight fitting glass or metal doors, or a flue draft induction fan or as approved for minimizing back-drafting. Factory built fireplaces shall use doors listed for the installed appliance.

NEW SECTION

WAC 51-51-1006 Section R1006--Exterior air supply.

R1006.2 Solid fuel burning appliances and fireplaces. Solid fuel burning appliances and fireplaces shall be provided with tight fitting metal or ceramic glass doors, and:

1. A source from outside the structure of primary combustion air, connected to the appliance as per manufacturer's specification. The air inlet shall originate at a point below the fire box. The duct shall be 4 inches or greater in diameter, not exceed 20 feet in length, and be installed as per manufacturer's instructions; or

2. The appliance and manufacturer's recommended combustion air supply, as an installed unit, shall be certified by an independent testing laboratory to have passed Test No. 11-Negative Pressure Test, Section 12.3, of ULC S627-M1984 "Space Heaters for Use with Solid Fuels," modified as follows:

Negative pressure of 8 Pascal shall be initially established with the chamber sealed and the air supply, if not directly connected to the appliance, closed off.

The air supply if not directly connected to the appliance, shall then be opened.

The maximum allowable air exchange rate from chamber leakage and intentional air supply for the unit (appliance with combustion air supply) in the test chamber is 3.5 air changes per hour, or 28 cfm (cubic feet of air per minute), whichever is less.

EXCEPTION: Combustion air may be supplied to the room in which the solid fuel burning appliance is located in lieu of direct ducting, provided that one of the following conditions is met:

1. The solid fuel burning appliance is part of a central heating plant and installed in an unconditioned space in conformance with the International Mechanical Code; or
2. The solid fuel burning appliance is installed in existing construction directly on a concrete floor or surrounded by masonry materials as in a fireplace. The combustion air terminus shall be located as close to the solid fuel burning appliance as possible and shall be provided with a barometric damper or equivalent. The combustion air source shall be specified by the manufacturer or no less than 4 inches in diameter or the equivalent in area or as approved.

R1006.1.1 Factory built fireplaces. This section is not adopted.

R1006.1.2 Masonry fireplaces. This section is not adopted.

R1006.2 Exterior air intake. This section is not adopted.

NEW SECTION

WAC 51-51-1302 Section M1302--General mechanical system requirements.

M1302.2 Construction Documents. The plans and specifications shall show in sufficient detail pertinent data and features of the materials, equipment and systems as herein governed, including, but not limited to: Design criteria, size and type of apparatus and equipment, systems and equipment controls, provisions for combustion air to fuel burning appliances, and other pertinent data to indicate conformance with the requirements of this code.

M1302.3 Testing. At the discretion of the building official, flow testing may be required to verify that the mechanical system(s) satisfies the requirements of this code. Flow testing may be performed using flow hoods measuring at the intake or exhaust points of the system, in-line pitot tube, or pitot-traverse type measurement systems in the duct, short term tracer gas measurements, or other means approved by the building official.

NEW SECTION

WAC 51-51-1415 Section M1415--Masonry heaters.

M1415.1 General. Masonry heaters shall be approved by the department of ecology and shall contain both of the following:

1. Primary combustion air ducted from the outside of the structure to the appliance.

2. Tight fitting ceramic glass or metal doors. Flue damper, when provided, shall have an external control and when in the closed position shall have a net free area of not less than 5% of the flue cross sectional area.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

WAC 51-51-1501 ((~~Section M1501--General.~~) Reserved.

~~((**M1501 Outdoor discharge.** The air removed by every mechanical exhaust system shall be discharged to the outdoors. Air shall not~~

~~be exhausted into an attic, soffit, ridge vent or crawl space.~~

~~EXCEPTION: Whole-house cooling attic fans that discharge into the attic space of dwelling units having private attics shall be permitted:))~~

NEW SECTION

WAC 51-51-1507 Section M1507--Mechanical ventilation.

M1507.1 General. Source specific exhaust ventilation is required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where water vapor or cooking odor is produced. The minimum source specific ventilation effective exhaust capacity shall not be less than levels specified in Table M1507.3.

M1507.3.1 Source Specific Exhaust Fans. Exhaust fans providing source specific ventilation shall have a minimum fan flow rating not less than 50 cfm at 0.25 inches water gauge for bathrooms, laundries, or similar rooms and 100 cfm at 0.25 inches water gauge for kitchens. Manufacturers' fan flow ratings shall be determined as per HVI 916 (April 1995) or AMCA 210.

EXCEPTION: Where a range hood or down draft exhaust fan is used to satisfy the source specific ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 inches water gauge.

M1507.3.2 Source Specific Ventilation Controls. Source specific ventilation systems shall be controlled by manual switches, dehumidistats, timers, or other approved means. Source specific ventilation system controls shall be readily accessible.

M1507.3.3 Source Specific Ventilation Ducts. Source specific ventilation ducts shall terminate outside the building. Exhaust ducts shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4. Terminal elements shall have at least the equivalent net free area of the duct work. Terminal elements for exhaust fan duct systems shall be screened or otherwise protected from entry by leaves or other material. Minimum 50% net free area shall meet the requirements of R303.5.

NEW SECTION

WAC 51-51-1508 Section M1508--Whole house ventilation.

M1508.1 General. This section establishes minimum prescriptive design requirements for whole house ventilation systems. Each dwelling unit or guest room shall be equipped with a ventilation

system complying with Section M1508.4, M1508.5, M1508.6 or M1508.7. Compliance is also permitted to be demonstrated through compliance with the International Mechanical Code.

M1508.1.1 Operating Instructions. Installers shall provide the manufacturer's installation, operating instructions, and a whole house ventilation system operation description.

M1508.2 Continuously Operating Exhaust Ventilation Systems. Continuously operating exhaust ventilation systems shall provide the minimum flow rates specified in Table M1508.2.

TABLE M1508.2
MINIMUM VENTILATION RATES
(Continuously operating systems)

	Bedrooms				
	0-1	2-3	4-5	6-7	>7
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165

M1508.3 Intermittently Operating Ventilation Systems. The delivered ventilation rate for intermittently operating ventilation systems shall be the combination of its delivered capacity from Table M1508.2, and its ventilation effectiveness and daily fractional operation time from Table M1508.3.

$$Q_r = Q_r / (\epsilon f)$$

Where:

- Q_r = Fan flow rate
- Q_r = Ventilation air requirement (from Table M1508.2)
- = Ventilation effectiveness (from Table M1508.3)
- f = Fractional operation time

TABLE M1508.3
VENTILATION EFFECTIVENESS FOR
INTERMITTENT FANS

Daily Fractional Operation Time, f	Ventilation Effectiveness, ϵ
$f \leq 35\%$	0.33
$35\% \leq f < 60\%$	0.50
$60\% \leq f < 80\%$	0.75
$80\% \leq f$	1.0

For systems designed to operate at least once every three hours, ventilation effectiveness can be 1.0.

M1508.4 Intermittent Whole House Ventilation Using Exhaust Fans.

This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using exhaust fans. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

M1508.4.1 Whole House Ventilation Fans. Exhaust fans providing whole house ventilation shall have a flow rating at 0.25 inches water gauge as specified in Table M1503.2. Manufacturers' fan flow ratings shall be determined according to HVI 916 (April 1995) or AMCA 210.

M1508.4.2 Fan Noise. Whole house fans located 4 feet or less from the interior grille shall have a sone rating of 1.0 or less measured at 0.1 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915 (October 1995). Remotely mounted fans shall be acoustically isolated from the structural elements of the building and from attached duct work using insulated flexible duct or other approved material.

M1508.4.3 Fan Controls. The whole house ventilation fan shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation fan without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house fan for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

M1508.4.4 Exhaust Ducts. All exhaust ducts shall terminate outside the building. Exhaust ducts shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.

M1508.4.5 Outdoor Air Inlets. Outdoor air shall be distributed to each habitable room by individual outdoor air inlets. Where outdoor air supplies are separated from exhaust points by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, installation of grilles, transoms, or similar means. Doors shall be undercut to a minimum of 1/2 inch above the surface of the finish floor covering.

Individual room outdoor air inlets shall:

1. Have controllable and secure openings;
2. Be sleeved or otherwise designed so as not to compromise the thermal properties of the wall or window in which they are placed;
3. Provide not less than 4 square inches of net free area of opening for each habitable space. Any inlet or combination of inlets which provide 10 cfm at 10 Pascals as determined by the Home Ventilating Institute Air Flow Test Standard (HVI 901 November 1996) are deemed equivalent to 4 square inches net free area.

Inlets shall be screened or otherwise protected from entry by

leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

M1508.5 Intermittent Whole House Ventilation Integrated With a Forced-Air System. This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems integrated with forced-air ventilation systems. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

M1508.5.1 Integrated Whole House Ventilation Systems. Integrated whole house ventilation systems shall provide outdoor air at the rate calculated using Section M1508.3. Integrated forced-air ventilation systems shall distribute outdoor air to each habitable room through the forced-air system ducts. Integrated forced-air ventilation systems shall have an outdoor air inlet duct connecting a terminal element on the outside of the building to the return air plenum of the forced-air system, at a point within 4 feet upstream of the air handler. The outdoor air inlet duct connection to the return air stream shall be located upstream of the forced-air system blower and shall not be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The system will be equipped with a motorized damper connected to the automatic ventilation control as specified in Section M1508.5.2. The required flow rate shall be verified by field testing with a flow hood or a flow measuring station.

M1508.5.2 Ventilation Controls. The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the forced air system blower and the automatic damper. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

M1508.5.3 Ventilation Duct Insulation. All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

M1508.5.4 Outdoor Air Inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the

following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

M1508.6. Intermittent Whole House Ventilation Using a Supply Fan.

This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using an inline supply fan. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

M1508.6.1 Outdoor Air. Supply fan ventilation systems shall distribute outdoor air to each habitable room through the forced-air system ducts or through dedicated ducts to each habitable room. Supply fans shall have the capacity to provide the amount of outdoor air specified in Table M1508.2 at 0.40 inches water gauge as per HVI 916 (April 1995). The outdoor air must be filtered before it is delivered to habitable rooms. The filter may be located at the intake device, in line with the fan, or, in the case of a connection to the return plenum of the air handler, using the furnace filter. An outdoor air inlet shall be connected to either the supply or return air stream.

M1508.6.2 Ducts. An outdoor air inlet duct connection to the supply air stream shall be located downstream of the forced-air system blower. An outdoor air inlet duct connection to the return air stream shall be located at least 4 feet upstream of the forced-air system blower and its filter. Neither type of duct shall be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The outdoor air inlet duct shall be prescriptively sized in accordance with Table M1508.6.2. The terminal element on the outside of the building shall be sized 2 inches in diameter larger than the outdoor air inlet duct.

**TABLE M1508.6.2
PRESCRIPTIVE SUPPLY FAN DUCT SIZING**

Supply Fan Tested cfm at 0.40" wg		
Specified Volume from Table M1508.2	Minimum Smooth Duct Diameter	Minimum Flexible Duct Diameter
50 - 90 cfm	4 inch	5 inch
90 - 150 cfm	5 inch	6 inch
150 - 250 cfm	6 inch	7 inch
250 - 400 cfm	7 inch	8 inch

M1508.6.3 Dampers. The system shall be equipped with a back-draft damper and one of the following:

1. A calibrated manual volume damper installed and set to meet the measured flow rates specified in Table M1508.2 by field testing with a pressure gauge and/or following manufacturer's installation instructions; or

2. A manual volume damper installed and set to meet the measured flow rates specified in Table M1508.2 by field testing with a flow hood or a flow measuring station; or

3. An automatic flow-regulating device sized to the specified flow rates in Table M1508.2 which provides constant flow over a pressure range of 0.20 to 0.60 inches water gauge.

M1508.6.4 Ventilation Controls. The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

M1508.6.5 Ventilation Duct Insulation. All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

M1508.6.6 Outdoor Air Inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.

2. Where it will pick up objectionable odors, fumes or flammable vapors.

3. A hazardous or unsanitary location.

4. A room or space having any fuel-burning appliances therein.

5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.

6. Attic, crawl spaces, or garages.

M1508.7 Intermittent Whole House Ventilation Using a Heat Recovery Ventilation System. This section establishes minimum prescriptive requirements for intermittent whole house ventilation using a heat recovery ventilation system.

M1508.7.1 Heat Recovery Ventilation Systems. All duct work in heat recovery systems shall be sized and installed per the manufacturer's instructions. System minimum flow rating shall be not less than that specified in Table M1508.2. Heat recovery ventilation systems shall have a filter on the upstream side of the heat exchanger in both the intake and exhaust airstreams with a

minimum efficiency ratings value (MERV) of 6.

M1508.7.2 Ventilation Controls. The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

M1508.7.3 Ventilation Duct Insulation. All supply ducts in the conditioned space installed upstream of the heat exchanger shall be insulated to a minimum of R-4.

M1508.7.4 Outdoor Air Inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

NEW SECTION

WAC 51-51-1600 Chapter 16--Duct systems.

M1601.1.1 Above-ground duct systems. Above-ground duct systems shall conform to the following:

1. Equipment connected to duct systems shall be designed to limit discharge air temperature to a maximum of 250°F (121°C).
2. Factory-made air ducts shall be constructed of Class 0 or Class 1 materials as designated in Table M1601.1.1(1).
3. Fibrous duct construction shall conform to the SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards.
4. Minimum thickness of metal duct material shall be as listed in Table M1601.1.1(2). Galvanized steel shall conform to ASTM A 653.
5. Use of gypsum products to construct return air ducts or

plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.

6. Duct systems shall be constructed of materials having a flame spread index not greater than 200.

7. Stud wall cavities and the spaces between solid floor joists shall not be used as a duct or an air plenum in new construction. For existing systems, stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following:

7.1. These cavities or spaces shall not be used as a plenum for supply air.

7.2. These cavities or spaces shall not be part of a required fire-resistance-rated assembly.

7.3. Stud wall cavities shall not convey air from more than one floor level.

7.4. Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting fire blocking in accordance with Section R602.8.

NEW SECTION

WAC 51-51-1700 Chapter 17--Combustion air.

M1701.1 Scope. Solid-fuel-burning appliances shall be provided with combustion air in accordance with the appliance manufacturer's installation instructions. Oil-fired appliances shall be provided with combustion air in accordance with NFPA 31. The methods of providing combustion air in this chapter do not apply to fireplaces, fireplace stoves and direct-vent appliances. The requirements for combustion and dilution air for gas-fired appliances shall be in accordance with Chapter 24.

Fireplaces shall comply with Section 1001.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-2439 ((Section G2439--Clothes dryer exhaust.))
Reserved.**

~~((G2439.5.3 Protection required. Plates or clips shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Plates or clips shall be placed on the finished face of all framing members where there is less than 1 1/4 inches (32 mm) between the duct and the finished~~

~~face of the framing material. The plate or clip shall be steel not less than 1/16 inch (1.59 mm) in thickness and of sufficient width to protect the duct.))~~

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

WAC 51-51-4300 Chapter ((43)) 44--Referenced standards.

**Washington State Building Code Standard 31-2
STANDARD TEST METHOD FOR PARTICULATE EMISSIONS FROM FIREPLACES**

**See Section R1004.1, *International Residential Code*
Standard is located in *International Building Code*, Chapter 35**

NEW SECTION

WAC 51-51-60105 Appendix R--Dwelling unit fire sprinkler systems.

AR105.1 General. Where installed, residential fire sprinkler systems, or portions thereof, shall be in accordance with NFPA 13D or Appendix R, which shall be considered equivalent to NFPA 13D. Appendix R shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall supply domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system.

AR105.1.1 Required sprinkler locations. Sprinklers shall be installed to protect all areas of a dwelling unit.

EXCEPTIONS:

1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m²) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1 m²) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

AR105.2 Sprinklers. Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's installation instructions.

AR105.2.1 Temperature rating and separation from heat sources.

Except as provided for in Section AR105.2.2, sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 170°F (77°C). Sprinklers shall be separated from heat sources as required by the sprinkler manufacturer's installation instructions.

AR105.2.2 Intermediate temperature sprinklers. Sprinklers shall have an intermediate temperature rating not less than 175°F (79°C) and not more than 225°F (107°C) where installed in the following locations:

1. Directly under skylights, where the sprinkler is exposed to direct sunlight.
2. In attics.
3. In concealed spaces located directly beneath a roof.
4. Within the distance to a heat source as specified in Table AR105.2.2.

AR105.2.3 Freezing areas. Piping shall be protected from freezing. Where sprinklers are required in areas that are subject to freezing, dry-side-wall or dry-pendent sprinklers extending from a nonfreezing area into a freezing area shall be installed.

**TABLE AR105.2.2
LOCATIONS WHERE INTERMEDIATE
TEMPERATURE SPRINKLERS ARE REQUIRED**

HEAT SOURCE	RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED ^{a,b} (inches)
Fireplace, side of open or recessed fireplace	12 to 36
Fireplace, front of recessed fireplace	36 to 60
Coal and wood burning stove	12 to 42
Kitchen range top	9 to 18
Oven	9 to 18
Vent connector or chimney connector	9 to 18
Heating duct, not insulated	9 to 18
Hot water pipe, not insulated	6 to 12
Side of ceiling or wall warm air register	12 to 24
Front of wall mounted warm air register	18 to 36
Water heater, furnace or boiler	3 to 6

HEAT SOURCE	RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED ^{a,b} (inches)
Luminaire up to 250 watts	3 to 6
Luminaire 250 watts up to 499 watts	6 to 12

For IS: 1 inch = 25.4 mm.

a. Sprinklers shall not be located at distances less than the minimum table distance unless the sprinkler listing allows a lesser distance.

b. Distances shall be measured in a straight line from the nearest edge of the heat source to the nearest edge of the sprinkler.

AR105.2.4 Sprinkler coverage. Sprinkler coverage requirements and sprinkler obstruction requirements shall be in accordance with Sections AR105.2.4.1 and AR105.2.4.2.

AR105.2.4.1 Coverage area limit. The area of coverage of a single sprinkler shall not exceed 400 square feet (37 m²) and shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions.

AR105.2.4.2 Obstructions to coverage. Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Sprinkler separation from obstructions shall comply with the minimum distances specified in the sprinkler manufacturer's instructions.

AR105.2.4.2.1 Additional requirements for pendent sprinklers. Pendent sprinklers within 3 feet (915 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

AR105.2.4.2.2 Additional requirements for sidewall sprinklers. Sidewall sprinklers within 5 feet (1524 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

AR105.2.5 Sprinkler installation on systems assembled with solvent cement. The solvent cementing of threaded adapter fittings shall be completed and threaded adapters for sprinklers shall be verified as being clear of excess cement prior to the installation of sprinklers on systems assembled with solvent cement.

AR105.2.6 Sprinkler modifications prohibited. Painting, caulking or modifying of sprinklers shall be prohibited. Sprinklers that have been painted, caulked, modified or damaged shall be replaced with new sprinklers.

AR105.3 Sprinkler piping system. Sprinkler piping shall be supported in accordance with the requirements for cold water

distribution piping. Sprinkler piping shall comply with all requirements for cold water distribution piping. For multipurpose piping systems, the sprinkler piping shall connect to and be a part of the cold water distribution piping system.

AR105.3.1 Nonmetallic pipe and tubing. Nonmetallic pipe and tubing, such as CPVC and PEX, shall be listed for use in residential fire sprinkler systems.

AR105.3.1.1 Nonmetallic pipe protection. Nonmetallic pipe and tubing systems shall be protected from exposure to the living space by a layer of not less than 3/8-inch (9.5 mm) thick gypsum wallboard, 1/2-inch thick plywood (13 mm), or other material having a 15-minute fire rating.

EXCEPTIONS:

1. Pipe protection shall not be required in areas that do not require protection with sprinklers as specified in Section AR105.1.1.
2. Pipe protection shall not be required where exposed piping is permitted by the pipe listing.

AR105.3.2 Shutoff valves prohibited. With the exception of shutoff valves for the entire water distribution system, valves shall not be installed in any location where the valve would isolate piping serving one or more sprinklers.

AR105.3.3 Single dwelling limit. Piping beyond the service valve located at the beginning of the water distribution system shall not serve more than one dwelling.

AR105.3.4 Drain. A means to drain the sprinkler system shall be provided on the system side of the water distribution shutoff valve.

AR105.4 Determining system design flow. The flow for sizing the sprinkler piping system shall be based on the flow rating of each sprinkler in accordance with Section AR105.4.1 and the calculation in accordance with Section AR105.4.2.

AR105.4.1 Determining required flow rate for each sprinkler. The minimum required flow for each sprinkler shall be determined using the sprinkler manufacturer's published data for the specific sprinkler model based on all of the following:

1. The area of coverage.
2. The ceiling configuration.
3. The temperature rating.
4. Any additional conditions specified by the sprinkler manufacturer.

AR105.4.2 System design flow rate. The design flow rate for the system shall be based on the following:

1. The design flow rate for a room having only one sprinkler shall be the flow rate required for that sprinkler, as determined by Section AR105.4.1.
2. The design flow rate for a room having two or more sprinklers shall be determined by identifying the sprinkler in that room with the highest required flow rate, based on Section AR105.4.1, and multiplying that flow rate by 2.
3. Where the sprinkler manufacturer specifies different

criteria for ceiling configurations that are not smooth, flat and horizontal, the required flow rate for that room shall comply with the sprinkler manufacturer's instructions.

4. The design flow rate for the sprinkler system shall be the flow required by the room with the largest flow rate, based on Items 1, 2 and 3.

5. For the purpose of this section, it shall be permissible to reduce the design flow rate for a room by subdividing the space into two or more rooms, where each room is evaluated separately with respect to the required design flow rate. Each room shall be bounded by walls and a ceiling. Openings in walls shall have a lintel not less than 8 inches (203 mm) in depth and each lintel shall form a solid barrier between the ceiling and the top of the opening.

AR105.5 Water supply. The water supply shall provide not less than the required design flow rate for sprinklers in accordance with Section AR105.4.2 at a pressure not less than that used to comply with Section AR105.6.

AR105.5.1 Water supply from individual sources. Where a dwelling unit water supply is from a tank system, a private well system or a combination of these, the available water supply shall be based on the minimum pressure control setting for the pump.

AR105.5.2 Required capacity. The water supply shall have the capacity to provide the required design flow rate for sprinklers for a period of time as follows:

1. 7 minutes for dwelling units one story in height and less than 2,000 square feet (186 m²) in area.

2. 10 minutes for dwelling units two or more stories in height or equal to or greater than 2,000 square feet (186 m²) in area.

Where a well system, a water supply tank system or a combination thereof is used, any combination of well capacity and tank storage shall be permitted to meet the capacity requirement.

AR105.6 Pipe sizing. The piping to sprinklers shall be sized for the flow required by Section AR105.4.2. The flow required to supply the plumbing fixtures shall not be required to be added to the sprinkler design flow.

AR105.6.1 Method of sizing pipe. Piping supplying sprinklers shall be sized using the prescriptive method in Section AR105.6.2 or by hydraulic calculation in accordance with NFPA 13D. The minimum pipe size from the water supply source to any sprinkler shall be 3/4 inch (19 mm) nominal. Threaded adapter fittings at the point where sprinklers are attached to the piping shall be a minimum of 1/2 inch (13 mm) nominal.

AR105.6.2 Prescriptive pipe sizing method. Pipe shall be sized by determining the available pressure to offset friction loss in piping and identifying a piping material, diameter and length using the equation in Section AR105.6.2.1 and the procedure in Section AR105.6.2.2.

AR105.6.2.1 Available pressure equation. The pressure available to offset friction loss in the interior piping system (P_t) shall be determined in accordance with Equation AR-1.

$$P_t = P_{\text{sup}} - PL_{\text{svc}} - PL_m - PL_d - PL_e - P_{\text{sp}}$$

(Equation AR-1)

Where:

P_t	=	Pressure used in applying Tables AR105.6.2(4) through AR105.6.2(9).
P_{sup}	=	Pressure available from the water supply source.
PL_{svc}	=	Pressure loss in the water-service pipe.
PL_m	=	Pressure loss in the water meter.
PL_d	=	Pressure loss from devices other than the water meter.
PL_e	=	Pressure loss associated with changes in elevation.
P_{sp}	=	Maximum pressure required by a sprinkler.

AR105.6.2.2 Calculation procedure. Determination of the required size for water distribution piping shall be in accordance with the following procedure:

Step 1 - Determine P_{sup}

Obtain the static supply pressure that will be available from the water main from the water purveyor, or for an individual source, the available supply pressure shall be in accordance with Section AR105.5.1.

Step 2 - Determine PL_{svc}

Use Table P2904.6.2(1) to determine the pressure loss in the water service pipe based on the selected size of the water service.

Step 3 - Determine PL_m

Use Table P2904.6.2(2) to determine the pressure loss from the water meter, based on the selected water meter size.

Step 4 - Determine PL_d

Determine the pressure loss from devices other than the water meter installed in the piping system supplying sprinklers, such as pressure-reducing valves, backflow preventers, water softeners or water filters. Device pressure losses shall be based on the device manufacturer's specifications. The flow rate used to determine pressure loss shall be the rate from Section AR105.4.2, except that 5 gpm (0.3 L/S) shall be added where the device is installed in a water-service pipe that supplies more than one dwelling. As alternative to deducting pressure loss for a device, an automatic bypass valve shall be installed to divert flow around the device when a sprinkler activates.

Step 5 - Determine PL_e

Use Table P2904.6.2(3) to determine the pressure loss associated with changes in elevation. The elevation used in applying the table shall be the difference between the elevation

where the water source pressure was measured and the elevation of the highest sprinkler.

Step 6 - Determine P_{sp}

Determine the maximum pressure required by any individual sprinkler based on the flow rate from Section AR105.4.1. The required pressure is provided in the sprinkler manufacturer's published data for the specific sprinkler model based on the selected flow rate.

Step 7 - Calculate P_a

Using Equation AR-1, calculate the pressure available to offset friction loss in water-distribution piping between the service valve and the sprinklers.

Step 8 - Determine the maximum allowable pipe length

Use Tables P2904.6.2(4) through P2904.6.2(9) to select a material and size for water distribution piping. The piping material and size shall be acceptable if the developed length of pipe between the service valve and the most remote sprinkler does not exceed the maximum allowable length specified by the applicable table. Interpolation of P_a between the tabular values shall be permitted.

The maximum allowable length of piping in Tables P2904.6.2(4) through P2904.6.2(9) incorporates an adjustment for pipe fittings, and no additional consideration of friction losses associated with pipe fittings shall be required.

AR105.7 Instructions and signs. An owner's manual for the fire sprinkler system shall be provided to the owner. A sign or valve tag shall be installed at the main shutoff valve to the water distribution system stating the following: "Warning, the water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shutoff the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."

AR105.8 Inspections. The water distribution system shall be inspected in accordance with Sections AR105.8.1 and AR105.8.2.

AR105.8.1 Preconcealment Inspection. The following items shall be verified prior to the concealment of any sprinkler system piping:

1. Sprinklers are installed in all areas as required by Section AR105.1.1.

2. Where sprinkler water spray patterns are obstructed by construction features, luminaires or ceiling fans, additional sprinklers are installed as required by Section AR105.2.4.2.

3. Sprinklers are the correct temperature rating and are installed at or beyond the required separation distances from heat sources as required by Sections AR105.2.1 and AR105.2.2.

4. The pipe size equals or exceeds the size used in applying Tables P2904.6.2(4) through P2904.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section AR105.6.1, the size used in the hydraulic calculation.

5. The pipe length does not exceed the length permitted by Tables AR105.6.2(4) through AR105.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section AR105.6.1, pipe lengths and fittings do not exceed those used in the hydraulic calculation.

6. Nonmetallic piping that conveys water to sprinklers is listed for use with fire sprinklers.

7. Piping is supported in accordance with the pipe manufacturer's and sprinkler manufacturer's installation instructions.

8. The piping system is tested in accordance with the plumbing code.

AR105.8.2 Final inspection. The following items shall be verified upon completion of the system:

1. Sprinklers are not painted, damaged or otherwise hindered from operation.

2. Where a pump is required to provide water to the system, the pump starts automatically upon system water demand.

3. Pressure-reducing valves, water softeners, water filters or other impairments to water flow that were not part of the original design have not been installed.

4. The sign or valve tag required by Section AR105.7 is installed and the owner's manual for the system is present.

NEW SECTION

WAC 51-51-60107 Appendix S--Fire sprinklers. The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

AS107.1 Fire sprinklers. An approved automatic fire sprinkler system shall be installed in new one-family and two-family dwellings and townhouses in accordance with Appendix R.

NEW SECTION

The following sections of the Washington Administrative Code are decodified as follows:

Old WAC Number	New WAC Number
51-51-0613	51-51-0612
51-51-4300	51-51-4400